



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/574,603	04/05/2006	Fumiaki Kikui	743421-84	4184
22204	7590	06/28/2007	EXAMINER	
NIXON PEABODY, LLP 401 9TH STREET, NW SUITE 900 WASHINGTON, DC 20004-2128			QUINTO, KEVIN V	
			ART UNIT	PAPER NUMBER
			2826	
			MAIL DATE	DELIVERY MODE
			06/28/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/574,603

Applicant(s)

KIKUI ET AL.

Examiner

Kevin Quinto

Art Unit

2826

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 11 May 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-12 is/are pending in the application.
- 4a) Of the above claim(s) 12 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-11 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 05 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date 4/5/06, 9/5/06
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

DETAILED ACTION

Election/Restrictions

1. Claim 12 is withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in the reply filed on May 11, 2007.

Claim Rejections - 35 USC § 102

2. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

3. Claims 1, 7, and 10 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayashi (USPN 5,527,604).
4. In reference to claim 1, by Hayashi (USPN 5,527,604) discloses a structure which meets the claim. Figure 2 of Hayashi discloses a substrate comprising a metal plate (20) and an insulating film (2) which is provided on the surface of the metal plate (20). The insulating film (2) includes needle alumina particles (4) and granular particles (5).
5. With regard to claim 7, Hayashi discloses that the film has 50 mass% in needle alumina particles (column 7, lines 63-67, column 8, lines 12-13).

Art Unit: 2826

6. In reference to claim 10, Hayashi discloses (column 5, lines 62-63) the use of Fe, Cu, and Al as the metal plate.

Claim Rejections - 35 USC § 103

7. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

8. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (USPN 5,527,604) in view of Funada et al. (USPN 6,232,398 B1).

9. In reference to claims 2 and 3, Hayashi does not disclose the use of silica or TiO₂ particles. However Funada et al. (USPN 6,232,398 B1, hereinafter referred to as the "Funada" reference) discloses that silica and titanium oxide particles are materials that are well known for their use in substrates since they have high heat conductivity (column 5, lines 35-38). Hayashi discloses that this is a desirable property for the granular particles (column 4, lines 30-33). In view of Funada, it would therefore be obvious to use silica or TiO₂ particles in the Hayashi structure.

10. Claims 2 and 3 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (USPN 5,527,604) in view of Yamaguchi et al. (United States Patent Application Publication No. US 2004/0266913 A1).

11. In reference to claims 2 and 3, Hayashi does not disclose the use of silica or MgO particles. However Yamaguchi et al. (United States Patent Application Publication

Art Unit: 2826

No. US 2004/0266913 A1, hereinafter referred to as the "Yamaguchi" reference) discloses that silica and magnesium oxide particles are materials are well known for their heat conductive property (p. 3, paragraph 33). Hayashi discloses that this is a desirable property for the granular particles (column 4, lines 30-33). In view of Yamaguchi, it would therefore be obvious to use silica or MgO particles in the Hayashi structure.

12. Claims 4, 5, 6, and 8 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (USPN 5,527,604).

13. In reference to claim 4, Hayashi does not disclose the exact ratio (6 to 15) as that claimed by Applicant. However:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

Therefore claim 4 is not patentably distinguishable over the Hayashi reference.

14. With regard to claim 5, Hayashi does not disclose the exact major-axis length (70 nm to 300 nm) as that claimed by the Applicant. However:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

Therefore claim 5 is not patentably distinguishable over the Hayashi reference.

15. With regard to claim 6, Hayashi does not disclose the exact mean particle size (5 nm to 80 nm) as that claimed by the Applicant. However:

"[W]here the general conditions of a claim are disclosed in the prior art, it is not inventive to discover the optimum or workable ranges by routine experimentation." In re Aller, 220 F.2d 454, 456, 105 USPQ 233, 235 (CCPA 1955)

Therefore claim 6 is not patentably distinguishable over the Hayashi reference.

Art Unit: 2826

16. In reference to claim 8, Hayashi teaches all of the claimed invention except for the exact thickness of the insulating film. Hayashi has a thickness of 120 μm (column 8; Table 2). Although Hayashi does not teach the exact thickness as that claimed by Applicant:

Note that the specification contains no disclosure of either the critical nature of the claimed dimensions or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

The shape, size, dimension differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note *In re Leshin*, 125 USPQ 416.

Therefore claim 8 is not patentably distinguishable over the Hayashi reference.

17. Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (USPN 5,527,604) in view of Murata et al. (United States Patent Application Publication No. US 2002/0003261 A1).

18. In reference to claim 9, Hayashi does not disclose the specific roughness claimed by the applicant. However Murata et al. (United States Patent Application Publication No. US 2002/0003261 A1, hereinafter referred to as the "Murata" reference) discloses that adjusting the roughness of an alumina surface for a substrate is well known in the art (p. 1, paragraph 11). Thus Murata makes it clear that the roughness is a result effective variable. It would have been obvious to one having ordinary skill in the art at the time of the invention was made to adjust the thickness of the well layer, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

Art Unit: 2826

Therefore claim 9 is not patentably distinguishable over the Hayashi and Murata references.

19. Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Hayashi (USPN 5,527,604).

20. In reference to claim 11, Hayashi teaches all of the claimed invention except for the exact thickness of the metal plate. Although Hayashi does not teach the exact thickness as that claimed by Applicant:

Note that the specification contains no disclosure of either the critical nature of the claimed dimensions or any unexpected results arising therefrom. Where patentability is said to be based upon particular chosen dimensions or upon another variable recited in a claim, the Applicant must show that the chosen dimensions are critical. In re Woodruff, 919 F.2d 1575, 1578, 16 USPQ2d 1934, 1936 (Fed. Cir. 1990).

The shape, size, dimension differences are considered obvious design choices and are not patentable unless unobvious or unexpected results are obtained from these changes. It appears that these changes produce no functional differences and therefore would have been obvious. Note *In re Leshin*, 125 USPQ 416.

Therefore claim 11 is not patentably distinguishable over the Hayashi reference.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kevin Quinto whose telephone number is (571) 272-1920. The examiner can normally be reached on M-F 8AM-5PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Sue Purvis can be reached on (571) 272-1236. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for

Art Unit: 2826

published applications may be obtained from either Private PAIR or Public PAIR.

Status information for unpublished applications is available through Private PAIR only.

For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should


you have questions on access to the Private PAIR system, contact the Electronic

Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a

USPTO Customer Service Representative or access to the automated information

system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KVQ



LEONARDO ANDUJAR
PRIMARY EXAMINER